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ABSTRACT

An energy education program was implemented to deliver energy conservation information to older Oklahomans in Chocktaw and Pushmataha counties. Methods for building inexpensive, home-produced, easy-to-install equipment to significantly reduce heat loss in the winter and cooling loss in the summer were emphasized. Six paraprofessionals were trained to deliver energy education to groups or individuals in their homes using a notebook and demonstration kit of audiovisual materials and computerized energy audits. The paraprofessionals taught structural modification and behavioral change in two phases, one during the summer and the other during the winter months. The aides reached 473 households composed of 803 people who were aged and generally limited in resources. Pre- and post-surveys were used to collect data on changes in consumers' knowledge of energy concepts. A conservation worksheet was used to get a base measurement of structural housing conditions and behavioral practices. Computerized energy audits were also completed on 220 homes. Use of t-tests showed a statistically significant difference of .0001 between mean scores of the pre- and post-surveys. During the summer phase, 87 households practiced 131 structural or behavioral activities; 111 did 123 activities. Additional data were collected and analyzed to help reveal why participants adopted or did not adopt practices taught, what their future energy plans were, who influenced decisions, and how changes were made. Appendixes include survey forms, case studies, and a 1980 project followup report. (YLB)

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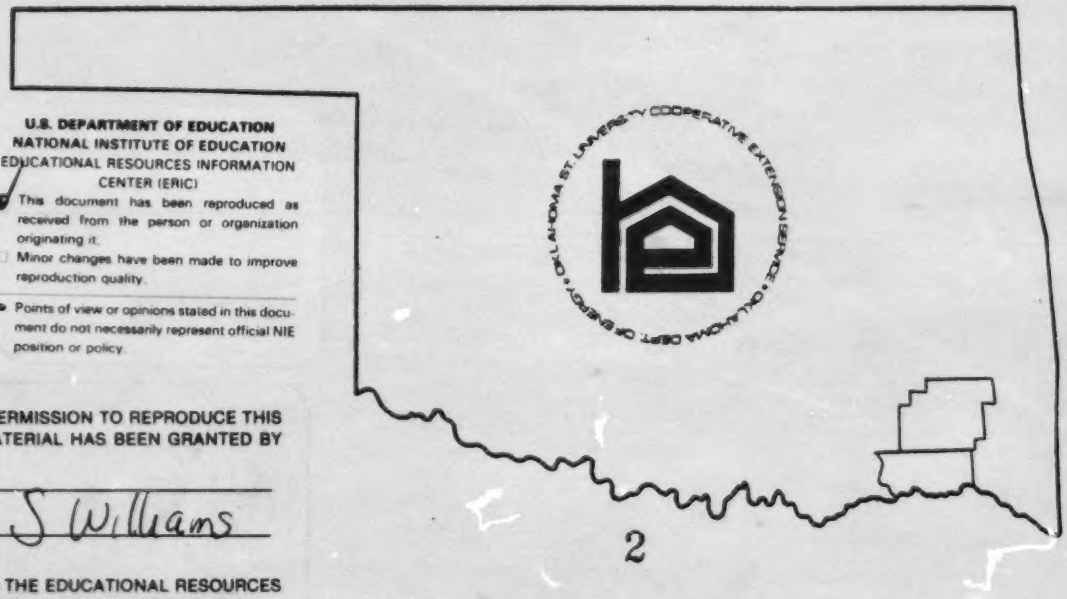

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ABSTRACT

Braun, B., Williams S., and Lauener, N. L. Energy Assistance for the Aged. Stillwater, OK: Cooperative Extension Service, Oklahoma State University, 1982. (Funded by the Oklahoma Department of Energy/Oklahoma Corporation Commission.)

Situation: Aged individuals and families are adversly impacted by the increase in the cost of a survival resource like energy because they lack the flexibility of other groups to accomodate rising prices. This portion of the population tends to have lower median income and educational level than the general population; to live in older, less structurally energy efficient housing; to have a high proportion of female headed households living alone in single family units; and to be more isolated and less able to travel. Therefore, they are vulnerable to increases in energy costs and to persons seeking to sell goods and services to reduce energy costs--often at a price inconsistent with the value of the goods or service. One way to offset this problem is to reduce the amount of energy an aged household uses.

Reduced energy consumption can only be attained if people are aware of appropriate practices and are willing to do them. Generally, aged individuals are somewhat removed from sources of sound information and motivation.

Therefore, Oklahoma State University Cooperative Extension, with funding from the Energy Extension Service through the Oklahoma Department of Energy/Oklahoma Corporation Commission, undertook a project targeted at this audience.

Purpose: The purpose of the project was to implement an energy education program to deliver energy conservation information to older Oklahomans in Choctaw and Pushmataha counties. Further, the purpose was to help these people increase comfort, decrease energy loss and control utility costs. The program emphasized inexpensive, home-produced, easy-to-install methods which can significantly reduce heat loss in the winter and heat gain in the summer. Wise purchasing of energy saving technologies was stressed.

Objectives:

1. To help aged individuals increase their comfort, decrease energy loss and control their utility costs.
2. To help aged consumers analyze and evaluate energy saving products and services prior to purchase.
3. To analyze the relationship between individual and family characteristics and the adoption of energy conservation practices.
4. To identify reasons why the individuals and families did or did not adopt energy efficient practices.
5. To develop recommendations for expanded energy education programs for older Oklahoma residents.
6. To encourage agencies and groups involved in energy education efforts to realize the importance of an on-going energy conservation program emphasis.

Methodology: Six paraprofessionals were trained to deliver energy education by group or home visits. They conducted the education in two phases: summer (July-September); winter (October-November). Each aide used a notebook and demonstration kit of audio-visual materials and computerized energy audits to teach structural modification and behavioral change.

Target Audience: Aides reached 473 households (803 people). Data collected on household characteristics confirmed that the clients were aged and generally limited in resources. About half were female-headed with no male present; two-thirds had less than 8 years of schooling; seventy percent had monthly incomes of $70-$499. Most owned their own single family dwelling.

Data Collection: A 28 item presurvey was administered by the aide upon contact with the family to determine household characteristics and knowledge of 10 energy concepts. A conservation worksheet was used to get a base measure of housing structural conditions and behavioral practices. Upon entry into the program and upon exit, 20 item pre- and postsurveys measured change in knowledge and collected other pertinent data. Computerized energy audits were completed on 220 homes providing information about the condition of the house.

Findings: Mean scores for both pre and post treatment knowledge scores were tested to determine the significance of the difference. Using t-tests, a statistically significant difference of .0001 was found. Eighty-seven households reported doing 1-31 structural or behavioral activities during the summer phase; 111 did 1-23 activities. Additional data were collected and analyzed to help reveal why participants adopted or did not adopt the practices taught; future plans; who influenced decisions; how changes were made; and other taught.

Conclusions: The project did serve an aged population using a model employing aides as the teachers and motivators. Knowledge increased and changes were made. Comfort was enhanced; energy costs controlled. Audits were a successful tool.

Recommendations: The results of this project should be considered when planning similar programs. Paraprofessionals should be considered for effective delivery. Households should be recontacted to ascertain long-term impact. A more sophisticated, yet simple to use, instrument is needed. Direct input to computerized data processing would be helpful. Audits should be continued. Educators, program designers and legislators should study the project as a guide for decision making.

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PART I: PROJECT FRAMEWORK

The concerns and problems confronting individuals and families living in a changing society clearly reveal the importance of reliable, appropriate information related to their needs. A multiplicity of problems are encountered by individuals and families, but particularly affected are those living on limited incomes. One major problem is lack of ability to cope with rising energy costs. Aged individuals and families are particularly affected by the increase in the cost of a survival resource such as energy because they lack the flexibility of other income groups to accommodate rising prices. In a recent national survey, 7 out of 10 older Americans said the high cost of energy is a very or somewhat serious personal problem.

One way to offset rising energy costs is to reduce the amount of energy consumed. If individuals and families are to use energy wisely, they must be made aware of the need for energy conservation and ways to change behavior.

Energy Extension Service Objectives

In an effort to help Oklahomans lower their consumption of energy, several programs have been developed through an Energy Extension Service grant from the U.S. Department of Energy. The overall objectives of this program are:

1. To reduce energy consumption by individual consumers and small establishments.

2. To increase knowledge of implementable and cost effective energy conservation measures by individual consumers, small establishments and energy influencing audiences.
3. To increase awareness and understanding of energy related issues and problems by the general public, including the near term cost-effectiveness of using certain renewable energy technologies.
4. To increase knowledge as to where additional assistance is available especially for low-income individuals.

When this project began, Oklahoma Energy Extension Service programs were administered through the Oklahoma Department of Energy. They were moved to the Oklahoma Corporation Commission.

Purpose of Project

Providing energy education for aged individuals and families has also been identified as a needed component of the Cooperative Extension Service at Oklahoma State University. Reaching this audience has historically been difficult. However, Extension's use of paraprofessionals in the Expanded Foods and Nutrition Program has been a successful method of working with limited resource families. In addition, the paraprofessional approach has been successfully used to deliver energy education in two Cooperative Extension Projects in Tulsa County, Oklahoma, and one in Choctaw County. A paraprofessional is a person trusted by families in the community. They work with families on a one-to-one or small group basis which supports this trusting relationship and increases the likelihood of positive change.

Based on common goals and objectives of Oklahoma State University Cooperative Extension and the Oklahoma Department of Energy, Energy Exten-

sion Service, the Energy Assistance for the Aged Project was funded by ODOE (Corporation Commission) and implemented jointly. The project was conducted from April 1, 1981 to March 31, 1982.

The purpose of this project was to implement a program to deliver energy conservation information to older Oklahomans. Further, the purpose was to help these individuals and families increase their comfort, decrease their energy loss and control their utility costs. The program emphasized inexpensive, home-produced, easy-to-install methods which can significantly reduce heat loss in the winter and heat gain in the summer. Wise purchasing of energy saving technologies was stressed.

To access current conditions and potential for cost-effective structural and behavioral changes, computerized energy audits were used. Audits have a demonstrated capability of providing personalized information to consumers. This service was coordinated with local utility companies and the Oklahoma Department of Energy (Corporation Commission).

Three weatherization practices (caulking, weatherstripping, and application of plastic to doors and windows) were presented. These three methods of weatherization are relatively inexpensive, easy to install, and contribute significantly to reduction of heat loss. Techniques to reduce heat gain in the summer included basic weatherization, shading devices for windows, and ways to circulate air in unairconditioned homes to attain maximum comfort while expending minimal amounts of energy. In addition to these housing modifications, suggestions were given on how to reduce energy use by adopting energy efficient habits within the home. Consideration of cost-benefits and wise buying practices were stressed when both behavioral and structural modifications were discussed.

Objectives of Project

The objectives of this project were:

1. To help aged individuals increase their comfort, decrease energy loss and control their utility costs.
2. To help aged consumers analyze and evaluate energy savings products and services prior to purchase.
3. To analyze the relationship between individual and family characteristics and the adoption of energy conservation practices.
4. To identify reasons why the individuals and families did or did not adopt energy efficient practices.
5. To develop recommendations for expanded energy education programs for older Oklahoma residents.
6. To encourage agencies and groups involved in energy education efforts to realize the importance of an on-going energy conservation program emphasis.

Methodology

Due to the time span, human resources and money available for the project, the following decisions were made concerning the project:

- conduct the project in two counties
- use paraprofessional energy education aides
- conduct summer and winter phases with unique and overlapping content
- provide information to individuals and families on low cost aspects of weatherization and a variety of energy efficient household habits
- challenge each aide to reach 50 households with information through any means available to persuade members to adopt recommended energy management practices

- encourage aides to work with existing groups and agencies such as senior citizens groups, civic, religious and social groups, Department of Economic and Community Affairs, Department of Human Services, KEDDO AAA, Utility Companies and other community resources

Aides were provided with a variety of training experiences from July 1 to July 15 and again in September and October. The first sessions focused on the summer phase; the rest on the winter phase. The training included an overview of the project, how to work with people, the aged as a special group, basic energy management concepts, computerized energy audits, summer and winter energy management strategies and record keeping. Sessions were designed to introduce aides to new material and let them practice or experience the concepts presented. Weekly training was held after field work began.

Each aide was supplied with a variety of support materials. These materials included a handbook containing basic information on the project, aide responsibilities, project forms and reference materials. In addition to the handbook, each aide had a suitcase kit of demonstration materials. These materials were designed to assist the aide as they made individual contacts or worked in small group meetings. Techniques and energy management strategies for the kit contents were chosen based on the following criteria:

1. reduce household energy use
2. increase comfort
3. low cost
4. could be home produced

Two approaches to energy conservation were used: a) structural modification and b) behavior change. Items in the kit served to illustrate each approach in a variety of ways. Some items were removed and replaced for the summer phase and vice versa for the winter phase. Following are the items included in the demonstration kit and brief reasons for including the item:

I. Structural - To stop infiltration, and/or block heat flow, the project team focused on the use of caulking, weatherstripping, storm windows and doors, insulation and window treatments. These changes in the physical structure of the house or some part thereof contribute to energy conservation.

A. Sample "Hole In The Wall" - 3" X 5" opening shows the air leakage around an average window.

B. Caulking Gun and Tube of Caulk - gives aides and clientele the opportunity to actually use a caulking gun.

C. Caulking Sample Board - shows sample butyl rubber caulking and latex caulking. Also shows proper bead and poor bead.

D. Weatherstripping Sample Board - shows sample of weatherstripping to familiarize clientele with various kinds available and best uses.

E. Threshold Sample Board - shows samples of weatherstipping to use around doors and how to install threshold.

F. Storm Window - sample shows how to install a plastic storm window.

G. Plastic Storm Window Sample Board - shows several weights of plastic and tells best uses of each.

H. Window Treatments - shows how awnings can attach to windows, sample of sun screens and solar film applied to glass.

I. Landscape - sample of trelliis with climbing plants.

J. Insulation Samples - shows samples of commonly available types of insulation.

II. Behavioral - The project team focused on changes that can be made in the family's behavior to increase comfort and decrease energy usage. These changes in individual or family habits and life style contribute to energy conservation.

A. Fabric Sample Boards - shows several types of fabrics with different thermal qualities for winter and summer.

B. Layers of Clothing - shows examples of wearing several layers of lightweight clothing for winter; lightweight loose clothing for summer.

C. Sleeveless Vests and Leggings - example of how long sleeve sweater can be recycled.

D. Color Sample Board - shows warm and cool colors in a color chart.

E. Roman Shades - one window treatment that can be very effective in making windows more energy efficient.

F. Window Inserts - two samples of a window treatment that is effective and inexpensive. Shows several kinds of finishes that can be used.

G. Windbreaker - sample made to show how to stop drafts under doors and windows.

H. Shades - two samples of roll-up indoor and roll-up outdoor shades.

III. Miscellaneous - Equipment for auditing included: a flashlight, 50 foot tape measure, a stiff tape measure and a thermometer.

PART II: CONDITIONS AT BEGINNING

Choctaw and Pushmataha Counties, located in southeastern Oklahoma, were the sites for the energy project. These counties were selected for the project for a variety of reasons including the success of the previous project in Choctaw county and the characteristics of the population.

According to population estimates by the Oklahoma Employment Securities Commission, Pushmataha has 16.2% and Choctaw has 17.2% of their population age 65 and older. Both counties are above the state average (12.6%). When those in the young old age (55-64) are included, the percent increases.

This portion of the population tends to have a lower median income and educational level than the rest of the population; to live in older, less structurally energy efficient housing; to have a high proportion of female headed households living alone in single family units; and to be more isolated and less able to travel. Therefore, they are vulnerable to increases in energy costs and to persons seeking to sell goods and services to reduce energy costs--often at a price inconsistent with the value of the goods or service.

With a high porportion of their populations in the older age group, these counties were prime targets for the project. In addition to the population, another criteria for selection was access to the clientele.

In Choctaw County, because of the 1980 project, there existed personnel on the Cooperative Extension staff who were knowledgable about the purposes and methodology of the project. Choctaw and Pushmata counties

enjoy excellent cooperative working conditions based on the administration of both county offices. The two county seats are within 20 miles of each other. Thus, distance for travel between counties for the program assistant and aides was kept at a minimum. Both counties had a credibility among the residents that could open doors otherwise left closed to such a project as this. Therefore, these two counties were selected for the project.

PART III: DISCUSSION OF TARGET GROUP

This project was conducted in summer and winter phases. Data is reported both separately and jointly.

Characteristics of Households

The project served a total of 473 households (803 people). Seventy percent lived in Choctaw county; 30% lived in Pushmataha. Four hundred forty-two were a part of the summer phase; 228 of the winter phase. Data is reported by phase in Table 1.

The fact that the project did serve an aged clientele with characteristics similar to a typical group of older persons is validated by data collected on family/household characteristics (See Table 1). Variables which are indicators of this clientele include: age, sex, and education of head of household, family size, income, residence type and tenure.

From the data in Table 1, it can be seen that the age range of the clientele was from 55 to 94 years of age. The mean age was 70; median, 69; mode, 74.

Older people usually have lower incomes than the general population. Among the households in this phase of the project, income ranged from $70 monthly ($840 yearly) to $1500 ($18,000). The mean was $426.81, ($5,121); median, $352 ($4,224); mode, $300 ($3,600). Current income guidelines use $395 per month ($3,790 yearly) for a single person household; $522 ($5,010) for a two person household as cutoffs for poverty levels for non-farm families. Thus, over 50% of the clients had incomes below the poverty level.

TABLE I

CHARACTERISTICS OF HOUSEHOLDS

VARIABLE	SUMMER N	SUMMER %	WINTER N	WINTER %
	N=442		N=228	
Sex of Household Head				
Male Head, Female Present	153	35.34	68	29.83
Female Head, Male Present	17	03.93	8	03.51
Male and Female Co-Heads	43	09.93	18	07.90
Male Head, No Female Present	24	05.54	7	03.07
Female Head, No Male Present	196	45.27	127	55.70
Age of Household Head				
55-64 years	112	25.93	63	27.75
65-74 years	174	43.29	105	46.26
75-94 years	133	30.79	59	25.99
Education of Household Head				
8 Years or Less	285	66.14	141	61.84
9 - 12 Years	120	28.30	77	33.77
12 - 18 years	26	06.57	10	04.39
Family Size				
One Person	204	47.11	124	54.39
2 Persons	183	42.26	80	35.09
3 Persons	29	06.70	16	07.02
4 Persons	10	02.31	5	02.19
5 or More Persons	7	01.62	3	01.32
Income Yearly (Monthly)				
Less Than $6,000 ($70-$499)	209	70.85	120	71.01
$6,000 - $12,000 ($500-$1,000)	81	27.45	48	28.40
$12,001 - $18,000 ($1,001-$1,500)	5	01.70	1	00.59
$18,001 - $24,000 ($1,501-$2,000)	-	-	-	-
Over $24,001 (over $2,001)	-	-	-	-

CHARACTERISTICS OF HOUSEHOLDS (Con't.)

VARIABLE	SUMMER N	SUMMER %	WINTER N	WINTER %
	N=442		N=228	
Residence Type				
Single Family	406	93.76	203	89.04
Duplex	5	01.16	7	03.07
Apartment	14	03.23	11	04.83
Mobile Home	8	01.85	7	03.07
Tenure				
Rent	72	16.67	45	19.74
Own	358	82.87	182	79.83
Live Rent Free	2	00.46	1	00.44
Payment of Utility Bills				
All	375	87.00	183	81.00
Part	53	12.00	42	19.00
None	2	00.50	1	00.44

Female-headed households tend to have lower incomes than male headed households. The largest number of household heads (196, 45% summer; 127, 56% winter) were females with no males present. Male headed households with a female present accounted for 153, 35% summer; 68, 30% winter of the families. The rest were distributed among three other categories.

Older people tend to live alone or with a spouse if married and living. Two hundred four, 41% summer; 124, 54% winter, of the households were single person units. An additional 183, 42% summer; 80, 35% winter, were two person units. The remainder had from 3 to 10 people in the household. Fifty four children ages 1-55 were reported living in these households in the summer; 26, ages 2-55 in the winter.

Home ownership is common among an aged population. Three hundred fifty eight (83%) of the households in the summer phase owned their homes; 182 (80%) in the winter. Four hundred six (94%) of the summer phase homes were single-family homes; 203 (89%) of the winter. Apartments accounted for 3% - 5% of the homes; duplexes and mobile homes the remainder. Home ownership has been identified as a factor in decisions to conserve energy.

Payment of utility bills can also have an impact on energy usage. Three hundred seventy-five (87%) of the households paid all of their bills; 53 (12%) paid part during the summer phase. For winter, 183 (81%), paid all; 42 (19%) paid part.

PART IV: METHODS USED TO REACH TARGET GROUP

For service deliveries, it is imperative that the method of delivery of the service be appropriate to the clientele and the nature of the service. The goal of program directors should be to develop and implement a project that returns the highest benefit for the least cost. Sometimes, however, the emphasis is placed on least cost irregardless of benefit.

Individualized Service Delivery

The primary method used by the aides to reach and teach clientele was the one-to-one or individualized approach. This method was used to reach households in both phases. Previous participants were contacted at the beginning of the project. Others were sought by knocking on doors and explaining the project or by referrals from satisfied project participants. In a few cases, clients were obtained at senior citizen centers.

Aides used a pre-treatment survey as an awareness device and introduction to the project (these surveys also provided entry data reported in Tables I-VII). Using their kits of visual and hands-on literature, the aides proceeded to interest the clients in a variety of structural and behavioral practices that could reduce energy use. The particular practices taught varied by season.

Home energy audits were conducted to provide data on the actual condition of the housing unit and the potential return rate on energy conserving measures. This information was used as a motivational tool with the clients as well as providing data for the energy saving estimates used in the project report. The audits also provided the project staff with housing characteristics data. (For more information, see the Computerized Residential Energy Audit section at the end of this part.)

Periodic visits were made by aides on an as-needed basis. At the end of each phase, the same aide collected post-treatment data to ascertain change in knowledge, structural and behavioral practices.

Paraprofessionals as Service Providers

The literature available on service delivery to limited resource persons supports the concept of use of paraprofessionals (aides) to reach and teach this clientele. Because of the characteristics of the target audiences and the past success rate using aides, this approach was used again. Basically, the rationale for using aides is that people can be influenced to change behavior if informed and motivated by someone with whom they can identify and trust.

Six women were selected from among the applicants for these jobs and trained to deliver the energy education. These six were called "Energy Education Aides".* Two had been aides in the 1980 project. They were all selected because they were somewhat similar in family characteristics to the clientele they served and lived in the same communities. They received instruction and practice in weatherizing houses; in auditing houses; in behavioral habits that affect energy use; in how to work with people; to use audiovisual equipment; organize time; keep records; interview people, etc. Training was conducted at the beginning of both phases and weekly during the project.

The aides were paid for 30 hours work for 20 weeks plus mileage. They were challenged to contact a minimum of 50 families each. They far surpassed this goal by averaging over 70 each for a total of 422 for the summer phase; 228 for the winter phase. While no cause for such behavior can be stated, we can report that commitments to the need for a project

*One had to dropout of the project for health reasons.

to help others was an important factor. Competent leadership and guidance from the aide supervisor and county directors was another factor. (Insight into aides' behavior is provided by the testimonies, success stories and comments they wrote and the journal they kept throughout the project. See Appendix B) An indepth study of paraprofessionals would be a valuable contribution for those responsible for programs using aides.

The families served by this project were asked whether or not they had known the aide prior to the initial contact and the length of their acquaintance. Of 442 households in the summer phase, 114 (26%) had known the aide over 5 years; 80 (19%) one to five years; 65 (15%) less than one year; 173 (40%) had just met the aide. Thus, 60% had known the aide for a period of time. Perhaps the other 40% can be explained by the "young" age of the aide and the "old" age of the respondents. Data from winter phase revealed that 208 (91%) knew the aide before becoming involved in the winter phase. The rest had just met the aides. Many of the winter participants had never been a part of the summer phase.

Computerized Residential Energy Audit

The computerized energy audit is designed to provide detailed information on the thermal characteristics of a house. This information can be used to evaluate cost and benefits of making changes in a house to reduce household energy use. It is an excellent educational tool which can assist the household in prioritizing various energy conserving activities and making decisions about energy retrofit projects. The audit is designed to move the homeowners/renters from awareness of household energy use to assisting them in making decisions specific to their homes.

The audit provides the following information on which to base decisions:

1) Energy consumption and cost based on current housing thermal efficiency and living habits;
2) Energy consumption and cost based on improving the thermal efficiency of the house to an ideal standard;
3) Indication of the percent of energy use reduction which could be achieved as the result of various housing modifications such as caulking and weatherstripping, adding storm windows and doors, and insulation;
4) Annual dollar savings that could result from bringing the house from current conditions to recommended standard;
5) Information on dollars that can be invested to increase the pay-back period for these investments; and
6) Water heating analysis which includes various temperature settings and savings due to installing an insulation wrap.

In summary, the homeowner/renter is supplied adequate cost and benefit information on which to base decisions related to modifying the existing house to increase its thermal efficiency.

All major utility companies in the state of Oklahoma offer their customers computerized energy audits as required by the Residential Conservation Service Program established by a federal mandate. A fee of $15.00 is charged for each audit done by a major utility. A computer program developed by an Oklahoma State University Agricultural Engineer is used by all utilities offering the ECHO (Energy Conservation Helps Oklahoma) program. Rural Electric Cooperatives across Oklahoma are also

using this program. Audits completed by energy education aides used the same methodology as all major utilities and Rural Electirc Cooperatives.

The aide supervisor completed audit training and was certified as an auditor. She, along with State Cooperative Extension Staff in Agriculture and Home Economics, trained the aides in audit procedures. The aide supervisor checked each audit input form before it was submitted to OSU Agricultural Engineering for processing.

Each household contacted was offered a residential audit free of charge. Audits were completed on the first or second visit to the house. The auditing process and output form were used as a teaching tool by the aides. The auditing process helped create a better awarness of current housing conditions in terms of thermal efficiencies and assisted the aide in pointing out specific problem areas within the home. Often the audit was used as an attention getting device to interest the individual or family in the total program. The audit not only provided cost benefit information to the homeowner/renter, but data collected established housing conditions before the aide started working with the household.

Audits were completed on 220 houses. Data provided by the audits on the structural conditions of these houses is available for further study.

PART V: CHANGE

If a program director is to make the best possible decisions as to allocation of resource, methods of delivery, etc., adequate information must be available. One type of information that is needed can be classified as "pre-treatment conditions"; another is "post-treatment conditions." Analysis of each and identification of change can aid in future decisions. From this project, data were collected in six categories: 1) household characteristics; 2) knowledge of energy; 3) structural practices; 4) behavioral practices; 5) data about the project; and 6) housing unit characteristics.

A presurvey was administered by the aide when initial contact was made with a client. The presurvey instrument consisted of 28 items. It was developed based on pilot testing during three other projects. The postsurvey was administered during the two week period at the close of each phase of the project. That instrument consisted of 20 items. It, too, was developed based on testing in previous projects. An Energy Conservation Worksheet was created, used and tested to get a base measure of structural conditions and behavioral practices upon entry into the program and upon exit for both phases. All forms are found in Appendix A.

1. Knowledge--Summer Phase

Respondents were asked 10 true-false items as a measure of their knowledge about energy. Items, frequencies and precentages are reported in Table II. Each item was coded: True = 2; False = 1; Don't know = 0.

TABLE II
SUMMER
KNOWLEDGE ITEMS
FREQUENCIES AND PERCENTAGES

ITEM	PRETREATMENT N*	PRETREATMENT %*	POST TREATMENT N*	POST TREATMENT %*
10. Air leaks are the largest single source of energy loss in your home.	363	82	341	93
11. Proper attic insulation will help reduce energy use in the summer as well as in the winter.	400	90	353	96
12. Blocking the sun's energy before it reaches the house is the most effective way of fighting summer heat.	395	89	362	99
13. Awnings are not very useful for blocking summer heat in Oklahoma.	193	44	239	65
14. Tightly woven draperies can be very helpful when used to block summer heat from entering living areas of a home.	352	80	327	89
15. Venetian blinds can reduce heat gain in a home by 25 to 50% depending on their color and the angle of the slats.	228	52	318	87
16. To be most effective, solar control film should be used on southern and northern windows.	137	44	243	66
17. Hot water heaters use very little energy.	193	21	234	64
18. A window air-conditioner with an Energy Efficiency Ration (EER) is very energy efficient.	93	77	209	57
19. A house fan will not lower the temperature of a room, but by moving the air, it helps a person feel cooler.	341	36	357	98

* This table represents only correct responses.

A total score was obtained for each respondent by adding their correct responses for the items pertaining to knowledge about energy. The score for the sample ranged from: minimum = 0 to maximum = 10, with a mean score of 6 for the pretreatment survey; 7 for the post-treatment survey which measured a significant difference at the .0001 level using a t-test. See Table III. Respondents did increase their knowledge based on the measure used.

TABLE III
SUMMER
PRETREATMENT - POST-TREATMENT
MEAN SCORE TABLE

MEASURES	PRETREATMENT MEANS	POST-TREATMENT MEANS	DIFFERENCE BETWEEN MEANS	T-VALUE*
Knowledge				
Right Response	6.09	6.89	-0.8	-40*
Wrong Response	1.38	1.06	0.32	32*
Don't Know	2.53	2.05	0.48	24*

*Significant at .0001 level.

2. Knowledge - Winter Phase

The same pre- and post-treatment instruments used in the summer phase were used in the winter phase. Results are shown in Table IV. Again, using t-test, significant differences were found. See Table V.

TABLE IV
WINTER
KNOWLEDGE ITEMS,
FREQUENCIES AND PERCENTAGES

	ITEM	PRETREATMENT N*	PRETREATMENT %*	POST TREATMENT N*	POST TREATMENT %*
10.	Air leaks are the largest single source of energy loss in a home.	221	97	202	99
11.	Lowering the temperature of a furnace or heater is the most inexpensive way of cutting energy.	210	92	192	94
12.	More heat is needed to be comfortable in moist air.	103	45	131	64
13.	Wearing layers of clothing can help keep you warm.	213	93	199	98
14.	Weatherizing involves three major procedures: weatherstripping, caulking and installing storm windows and doors.	213	93	198	97
15.	Fuzzy, fluffy jackets are warmer than smooth, silky jackets because they both hold body heat.	191	84	190	93
16.	10 to 30 cents of every dollar spent for heating can be saved by fixing air leaks in your home.	176	77	195	96
17.	Hot water heaters use very little energy.	159	70	158	77
18.	Placing rolled newspaper, heavy towels or rugs at the base of the doors and windows are easy and inexpensive ways to stop drafts.	227	100	204	100
19.	A fan can be used to move air from a warm room into a cold room and heat the cold room quickly.	165	72	190	93

*This table represents only correct responses.

TABLE V
WINTER
PRETREATMENT - POST-TREATMENT
MEAN SCORE TABLE

MEASURES	PRETREATMENT MEANS	POST-TREATMENT MEANS	DIFFERENCE BETWEEN MEANS	T-VALUE*
Knowledge				
Right Response	4.01	3.97	0.04	1.33*
Wrong Response	0.44	0.30	0.14	14.00*
Don't Know	5.54	5.72	-0.18	-6.00*

*Significant at .0001 level.

3. Conserving Activities - Summer Phase

Aides collected data on an energy conservation worksheet to describe pre- and post-project conditions. See Appendix A for a copy of the instrument. Table VI shows the frequencies and percentages of 31 activities done prior to and as a result of the project. A total of 87 households reported doing something. Use of portable fans, indoor and outdoor roll-up shades and louvered visors over cooling units accounted for the most frequently reported activites.

TABLE VI
SUMMER ENERGY CONSERVING ACTIVITIES
FREQUENCIES AND PERCENTAGES

ACTIVITIES	PRE-CONDITION N	PRE-CONDITION %	POST-CONDITION N	POST-CONDITION %
INSULATION				
Ceiling	240	55.81	5	1.37
Walls	142	33.02	2	0.55
Floors	23	05.35	1	0.27
CAULK				
Walls	213	49.53	3	0.82
Doors	234	54.42	4	1.10
Windows	244	56.74	5	1.37
WEATHERSTRIP				
Doors	236	54.88	4	1.10
Windows	190	44.19	4	1.10
Storm Windows	142	33.02	4	1.10
Storm Doors	194	45.12	3	0.82
Awnings	37	08.61	0	0.00
Sun Screen	1	00.23	0	0.00
Solar Control Film	7	01.63	5	1.37
LOUVERED VISOR				
Windows	1	00.23	3	0.82
Doors	0	00.00	0	0.00
Cooling unit	11	02.56	14	3.83
LANDSCAPING				
Trees/Shrubs	319	74.19	5	1.37
Trellis/Arbors	8	01.86	0	0.00
Cooling Equipment	94	21.86	5	1.37
SHADES				
Outdoor Roll-up	19	04.42	18	4.93
Indoor Roll-up	161	37.44	10	2.74
Roman	1	00.23	2	0.55
Draperies	266	61.86	7	1.92
Venetian Blinds	25	05.81	2	0.55

TABLE VI (Con't.)
SUMMER ENERGY CONSERVING ACTIVITIES
FREQUENCIES AND PERCENTAGES

ACTIVITIES	PRE-CONDITION N	%	POST-CONDITION N	%
Inserts	2	00.47	0	0.00
FANS				
Ceiling	17	03.95	3	0.82
Whole house/Attic	56	13.02	4	1.10
Portable	263	61.16	19	5.21
COOLING SYSTEM				
Day degree set	43	10.00	2	0.55
Nite degree set	27	06.28	2	0.55
Window cooling unit	153	35.58	8	2.19

4. Conserving Activities - Winter Phase

A similar conservation worksheet (See Appendix A) was used by aides to collect pre- and post-project conditions during the winter phase. Twenty-nine activities were measured. Participants reported doing 23 of the 29 activities. Adding humidity to the air ranked highest followed by storm windows, reduced hot water setting and day time heating. Layering of clothes and caulking windows were next. Table VII shows the frequencies and percentages.

TABLE VII
WINTER ENERGY CONSERVING ACTIVITIES
FREQUENCIES AND PERCENTAGES

ACTIVITIES	PRE-CONDITION N	PRE-CONDITION %	POST-CONDITION N	POST-CONDITION %
INSULATION				
Ceiling	104	49.76	1	0.47
Walls	56	26.79	1	0.47
Floors	10	04.79	0	0.00
CAULK				
Walls	95	45.46	6	2.80
Doors	105	51.22	12	5.61
Windows	108	52.68	18	8.41
WEATHERSTRIP				
Doors	115	56.10	8	3.74
Windows	77	37.56	5	2.34
Storm Windows	50	24.39	38	17.76
Storm Doors	87	42.44	7	3.27
WATER HTG. EQ.				
Faucets (leaky)	19	09.27	7	3.27
Pipes (insulated)	25	12.20	5	2.34
Tank (insulated)	5	02.44	0	0.00
Temp. Setting	88	42.93	24	11.22
LANDSCAPING				
Trees/Shrubs	144	70.94	0	0.00
Trellis/Arbors	4	01.97	0	0.00
Heating Equipment	44	21.68	0	0.00
SHADES				
Indoor Roll-up	86	42.36	2	0.94
Roman	1	00.49	2	0.94
Draperies	130	64.04	4	1.88
Drapery Liners	5	02.46	2	0.94
Inserts	0	00.00	1	0.47
Wind Breaker	0	00.00	12	5.63

TABLE VII (Con't.)
WINTER ENERGY CONSERVING ACTIVITIES
FREQUENCIES AND PERCENTAGES

ACTIVITIES	PRE-CONDITION N	PRE-CONDITION %	POST-CONDITION N	POST-CONDITION %
FANS				
Ceiling	9	04.46	0	00.00
Portable	118	54.42	3	00.41
HEATING SYSTEM				
Day degree set	36	17.82	23	10.80
Nite degree set	36	16.98	15	07.04
Humidity (added)	47	22.17	18	23.01
Layer Clothes	56	27.72	18	08.45

Prior to the project, no one had windbreakers or window inserts. At the end 12 and 1 repectively reported their use.

Thus, combining winter and summer, a total of 198 (348) households reported doing one or more activities to reduce energy use and/or increase comfort.

Additional data was collected to understand reasons for the behavior evidenced during the project. In Table VIII, responses to the question, "Why did you decide to weatherize your home?" are shown for both summer and winter participants. In both phases, comfort accounted for the most responses followed by saving money and high utility bills.

TABLE VIII

REASONS FOR WEATHERIZING

Why Did You Decide To Weatherize Your Home?	SUMMER N	SUMMER %	WINTER N	WINTER %
For more comfort	77	41.00	86	52.00
My utility bills were too high	48	25.00	33	20.00
To save money	59	31.00	44	27.00
My friends did and/or relatives did	0	00.00	0	00.00
To save energy for future generations	3	02.00	1	01.00
Because the supply of energy is so scarce	1	01.00	0	00.00

Table IX reveals reasons for not weatherizing. Home already weatherized, lack of money and inability to do the work, were reported most often in both phases.

TABLE IX
REASONS FOR NOT WEATHERIZING

Why Did You Decide Not To Weatherize Your Home?	SUMMER N	SUMMER %	WINTER N	WINTER %
Lack of money	101	27.22	24	11.77
Weather (too hot or too cold)	4	01.08	0	00.00
Too close to vacation time	0	00.00	0	00.00
Rent residence (Landlord should do it)	26	07.01	13	06.37
It won't save energy	1	00.27	0	00.00
Don't have the time	24	06.47	11	05.39
Not able to do the work	56	15.09	16	07.84
Don't know how	6	01.62	0	00.00
Home was already weatherized	75	20.22	35	17.16

Respondents were asked if they planned to weatherize in the future. Most did not know. One-third said no and about one-fourth said yes (Table X).

TABLE X
PLANS FOR FUTURE WEATHERIZATION

Do You Plan To Do Any Weatherization Projects In The Future?	SUMMER N	SUMMER %	WINTER N	WINTER %
Yes	35	23.10	55	26.96
No	122	33.15	71	34.80
Do not know yet	161	43.70	78	38.24

Another question asked was "Who most influenced the decision to weatherize?" Table XI shows that in both phases the aide accounted for the most response.

TABLE XI
WHO INFLUENCED WEATHERIZATION

What person or persons influenced you most to weatherize?	SUMMER N	SUMMER %	WINTER N	WINTER %
The Energy Aide	99	26.69	82	40.20
Friend	2	00.54	2	00.98
Relative	8	02.16	2	00.98
My family	15	04.04	8	03.92
Community leader	0	00.00	0	00.00
No one influenced the decision	19	05.12	28	13.73

Respondents were asked to explain how the structural changes were done. Most reported doing the work themselves or with help from family members (Table XII).

TABLE XII
HOW STRUCTURAL CHANGES WERE MADE

How did you get the structural changes made?	SUMMER N	SUMMER %	WINTER N	WINTER %
Did them myself	57	15.36	45	22.06
Friends helped me	2	00.54	9	04.41
Family helped	16	04.31	19	09.31
Paid workmen	5	01.35	7	03.43
Service group	12	03.29	8	03.92

Each participant has the potential for teaching others. Therefore, respondents were asked if they had taught anyone and what had been done as a result (Table XIII). Sixteen percent in both phases for a total of 92 taught others. Sixteen reported they knew something had been done as a result; 9 said no and the rest didn't know.

TABLE XIII
PARTICIPANTS WHO TAUGHT OTHERS

Did you teach a neighbor or a friend how to keep cooler (warmer)?	SUMMER N	SUMMER %	WINTER N	WINTER %
Yes	59	16.03	33	16.18
No	299	81.25	170	83.33
I do not know	10	02.72	1	00.49
Did they do anything because of the information you gave them?				
Yes	10	16.39	6	18.18
No	4	06.56	5	15.15
I do not know	47	77.05	22	66.67

PART VI: SIGNIFICANCE

The impact of this project on the lives of the project personnel, individuals and families of Choctaw and Pushmataha counties, and ultimately on the state, region and nation is worthy of review.

As a result of this project, the people involved increased their human capital--knowledge and skills: 1) Choctaw and Pushmataha counties have a trained cadre of paraprofessionals capable of conducting further projects or contributing service in other ways to their community. 2) The participants who learned how, why and when to apply structural and behavioral practices to decrease energy use are now educated and could reapply their knowledge and skills in future years. 3) The project personnel became more skilled in developing, implementing and evaluating a cooperative project such as this. Future projects should benefit from this bank of experience. 4) The services of Cooperative Extension in both counties as well as the Oklahoma Department of Energy (Now the Energy Conservation Department of the Oklahoma Corporation Commission) became known to the participants.

In addition to increased human capital, scarce resources (money and energy) were extended or conserved for both households and society. If the applied weatherization practices result in reduced energy consumption, households benefit directly; society indirectly. A decrease in energy use should help households avoid increases in costs. Thus,

monetary resources are extended. Taxpayers should benefit from the cooperation of the public agencies involved in the project. The complimentary interfacing of efforts and pooling of resources should have multiplied the dollars allocated to each agency to fulfill given responsibilities. Additionally, the need for governement subsidies should be reduced. If people can learn to help themselves and others, they may be less likely to become dependent upon government subsidies. Their self worth should be enhanced also.

The Energy Extension Service, who granted the money through the Oklahoma Department of Energy (Oklahoma Corporation Commission) to Cooperative Extension, benefited from the project. The project contributed data to help the EES meet the following of their objectives:

1) A reduction in energy consumption by individual consumers.
2) An increased knowledge of implementable and cost-effective energy conservation measures.
3) An increased knowledge as to where additional assistance is available especially for low-income individuals.

Methods and materials were successful. Use of aides proved to be effective. Aides were credited with influencing decision to adopt and with provision of actual weatherization in addition to their function as educators. In a six month period, they were trained, motivated, and supervised to the extent that they reached and taught 473 households (803 people) and collected data on most of their clients.

Those clients are typically difficult to reach and often lack the needed resources to do the practices advocated. Still, an impressive number, in the short length of the project, adopted one or more practices.

Tne audit proved to be a useful tool. Aides were able to be trained to conduct valid audits. At $15 an audit X 220, this service is worth $3,300. For the limited income population, this is an important contribution.

The data collection forms were the most sophisticated to date. Their use provided a key step in the development of a meaningful cost-benefit analysis.

Focusing strictly on an aged population provided valuable experience and data to the project designers and staff. This information can be used for other projects aimed at peopled aged 55 and older.

PART VII: CONCLUSIONS

Based on the data presented thus far, the following conclusions can be made:

1) The project did reach an aged audience. They were taught to decrease energy loss, to control utility bills and to increase comfort. Thus, objective number one was met.
2) Clients were taught to analyze services and products prior to purchase. The audit helped in this respect. Thus, objective number two was reached.
3) Objective three was achieved through the analysis of family characteristics.
4) Households adopted primarily for reasons of comfort and cost. For those who did not, lack of money or home already weatherized accounted for most of the reasons given. Thus, objective number four was met.
5) The evidence thus supports the conclusion that use of paraprofessionals to reach and teach aged families is a successful model. Families were informed and many motivated to adopt practices taught as a result of the aides outreach. Recommendations were created as a fulfillment of objective number five.
6) Results and a description of the project were communicated to several public and private organizations including the State Unit on Aging, Little Dixie Community Action Center, Human Services, Senior Citizens Center, KEDDO AAA, Utility Companies, Cooperative

Extension, the general public, state and federal legislators, professional colleagues. Thus, objective six was met.

7) The computerized energy audit is a useful tool for this audience Aides can be taught to conduct valid audits.

PART VIII: RECOMMENDATIONS

As a result of this project, the following recommendations were identified:

1) The result of this project should be considered when planning energy education programs to reach aged clientele.
2) Agencies presently serving the clientele should be identified and contacted for interagency cooperation.
3) Paraprofessionals should be considered for effective delivery of energy education programs.
4) Households should be recontacted in future years to ascertain the long-term impact of the project.
5) Measures of actual and estimated energy savings should be obtained and analyzed to quantify the impact of the project.
6) The data should be further analyzed to reveal data relevant to the project.
7) A more sophisticated, yet simple to complete, instrument is needed.
8) Data collection and analysis could be enhanced by weekly checks of the aides records and input to computer storage via a data processing terminal.
9) Audits should be an integral part of the teaching.
10) The methodology and impacts of this project should provide needed data for program designers responsible for program decision making. Educators and legislators need to take note of the results when they choose from among a variety of proposed plans for achieving similar goals.

For complete understanding of this and other energy education projects, contact:

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APPENDIX A

THE ENERGY EVENT

ENERGY EDUCATION PROGRAM

GROUP MEETING

SURVEY FORM

ID number _____

Location _____

Date _____

Aide Name _____

___ ___ ___
Attendance Sheet number

DIRECTIONS: Please answer each question or statement by putting an "X" in the space that matches your answer.

INFORMATION ABOUT YOUR HOUSE

1. In which type of house do you live?

_____1. Single family
_____2. Duplex
_____3. Apartment
_____4. Mobile home

2. Do you rent or own your home?

_____1. Rent
_____2. Own
_____3. Live rent free

3. Do you pay any part of your utility bill (electric, water, gas)?

_____1. All
_____2. Part
_____3. None

INFORMATION ABOUT OCCUPANTS

_____1. Male head, female present
_____2. Female head, male present
_____3. Male and female co-heads
_____4. Male head, no female present
_____5. Female head, no male present

FORM B-2-S

5. In what year were you born? _____ _____
year age

6. How many years of formal education have you completed? _____
years

What is the highest grade or degree you completed? _____

7. How many people are living in this house? _____
#people

8. What is your monthly household income? _____
monthly

9. How many children are living in this house? _____
#children

SEX	AGE	SEX	AGE
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

INFORMATION ABOUT YOUR ENERGY OPINIONS

DIRECTIONS: Please circle your response. "?" is for DO NOT KNOW.

10. Yes ? No Air leaks are the largest single source of energy loss in your home.
11. Yes ? No Proper attic insulation will help reduce energy use in the summer as well as in the winter.
12. Yes ? No Blocking the sun's energy before it reaches the house is the most effective way of fighting summer heat.
13. Yes ? No Awnings are not very useful for blocking summer heat in Oklahoma.
14. Yes ? No Tightly woven draperies can be very helpful when used to block summer heat from entering living areas of a home.
15. Yes ? No Venetian blinds can reduce heat gain in a home by 25 to 50% depending on their color and the angle of the slats.
16. Yes ? No To be most effective, solar control film should be used on southern and northern windows.
17. Yes ? No Hot water heaters use very little energy.
18. Yes ? No A window air-conditioner with an Energy Efficiency Ration (EER) of 2 is very energy efficient.
19. Yes ? No A house fan will not lower the temperature of a room, but by moving the air, it helps a person feel cooler.

GENERAL INFORMATION

20. Have you had any previous Energy Conservation Education?

_____1. Yes

_____2. No

21. If yes, please indicate from whom, where, and/or when.

_____

_____

_____

22. Did you know the "Energy Aide" before today?

_____1. Yes

_____2. No

23. How long have you known the "Energy Aide"?

_____1. Just met

_____2. Less than one year

_____3. 1 to 5 years

_____4. More than 5 years

Thank you very much for answering this survey. We appreciate the time and effort you have given this task.

ENERGY EDUCATION PROGRAM

FOLLOW-UP

SURVEY FORM

ID number _____

Location _____

Date _____

Aide Name _____

_ _ _ _

Coding form
Respondent
Number

INFORMATION ABOUT YOUR ENERGY OPINIONS

DIRECTIONS: Please circle your response. "?" is for DO NOT KNOW.

1. Yes ? No Air leaks are the largest single source of energy loss in your home.

2. Yes ? No Proper attic insulation will help reduce energy use in the summer as well as in the winter.

3. Yes ? No Blocking the sun's energy before it reaches the house is the most effective way of fighting summer heat.

4. Yes ? No Awnings are not very useful for blocking summer heat in Oklahoma.

5. Yes ? No Tightly woven draperies can be very helpful when used to block summer heat from entering living areas of a home.

6. Yes ? No Venetian blinds can reduce heat gain in a home by 25 to 50% depending on their color and the angle of the slats.

7. Yes ? No To be most effective, solar control film should be used on southern and northern windows.

8. Yes ? No Hot water heaters use very little energy.

9. Yes ? No A window air-conditioner with an Energy Efficiency Ration (EER) of 2 is very energy efficient.

10. Yes ? No A house fan will not lower the temperature of a room, but by moving the air, it helps a person feel cooler.

AIDES: I would now like to ask you some general questions concerning summer energy conservation activities.

DO NOT READ RESPONSES TO THE PARTICIPANTS!

11. Why did you decide to weatherize your home this summer? (You may check more than one response.)

_____ 1. For more comfort
_____ 2. My utility bills were to high
_____ 3. To save money
_____ 4. My friends did and/or relatives did
_____ 5. To save energy for future generations
_____ 6. Because the supply of energy is so scarce
_____ 7. Have not adopted any energy conservation activities
_____ 8. Other (please specify) _____

_____

_____

12. Why did you decide not to weatherize your home this summer? (Do not ask this question if the participant answered item 11)

_____ 1. Lack of money
_____ 2. Weather (too hot)
_____ 3. Too close to vacation time
_____ 4. Rent residence (Landlord should do it)
_____ 5. It won't save energy
_____ 6. Don't have the time
_____ 7. Not able to do the work
_____ 8. Don't know how
_____ 9. Home was already weatherized
____ 10. Other (please specify) _____

_____

_____.

13. Do you plan to do any summer weatherization projects in the future?

_____ 1. Yes
_____ 2. No
_____ 3. Do not know yet

COMMENTS: _____

_____

_____

14. What person or persons influenced you most to weatherize your home this summer?

_____ 1. The Energy Aide (Please write in name) _____
_____ 2. Friend (Please write in name) _____
_____ 3. Relative (Please write in name) _____
_____ 4. My family
_____ 5. Community leader (Please write in name) _____
_____ 6. No one influenced the decision
_____ 7. Other (Please specify) _____
_____

15. Did you have your house Audited?

_____ 1. Yes COMMENTS: _____
_____ 2. No _____
_____ 3. Haven't yet _____

16. Do you feel the Energy Audit was beneficial to you?

_____ 1. Yes COMMENTS: _____
_____ 2. No _____
_____ 3. Did not have _____

17. How did you get the structural changes made?

_____ 1. Did them myself COMMENTS: _____
_____ 2. Friends helped me _____
_____ 3. Family helped _____
_____ 4. Paid workmen _____
_____ 5. Service group _____

18. Is there anything else you would like to tell us about the Energy Education Program?

_____ 1. Yes COMMENTS: _____
_____ 2. No _____
_____ 3. I do not know _____

FORM D-1-S

19. Did you teach a neighbor or a friend how to keep cool this summer?

_____ 1. Yes
_____ 2. No
_____ 3. I do not know

COMMENTS: _____
_____
_____

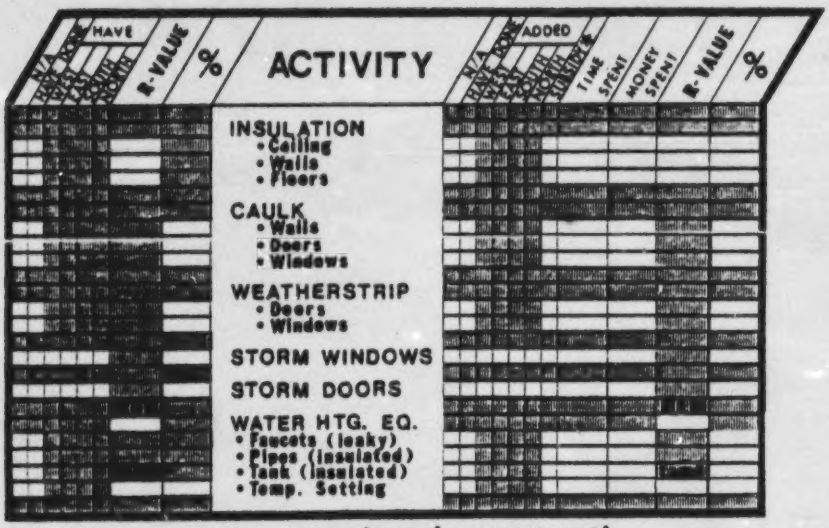
20. Did they do anything because of the information you gave them?

_____ 1. Yes
_____ 2. No
_____ 3. I do not know
_____ 4. WHAT _____
_____
_____

THANK YOU VERY MUCH FOR TALKING WITH ME.
I APPRECIATE YOU GIVING ME THIS TIME.
I HOPE YOU WILL BE MORE COMFORTABLE THIS SUMMER.

WINTER / GENERAL STRUCTURE

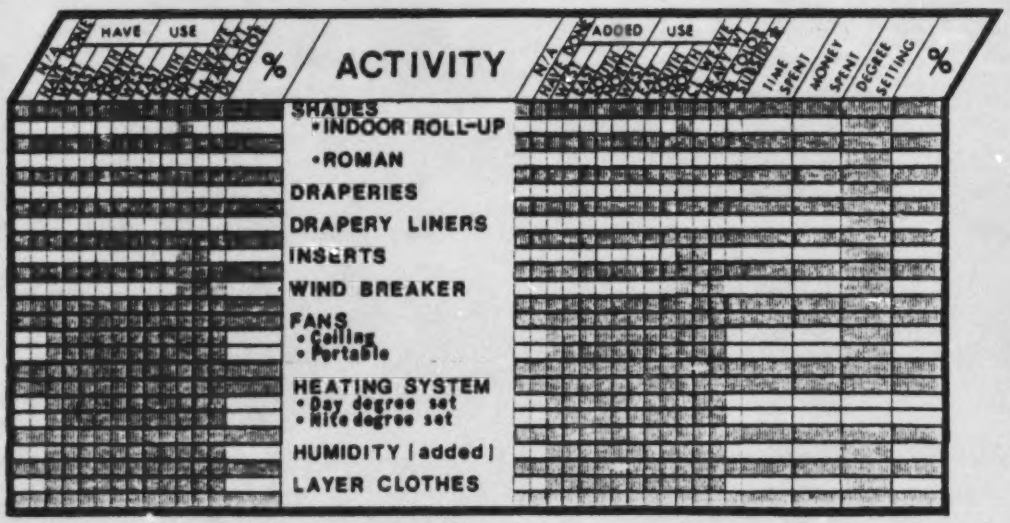
BEFORE AFTER



** Temp. • H: 160° - 141°; M: 140° - 121°; L: 120° - 100°

WINTER / Structure

WINTER / Behavior



* Subsidy - For each activity: Kind; $ amount; Source.

THE ENERGY EVENT

ENERGY EDUCATION PROGRAM

GROUP MEETING

SURVEY FORM

___ ___ ___
Attendance Sheet number

ID number _____

Location _____

Date _____

Aide Name _____

DIRECTIONS: Please answer each question or statement by putting an "X" in the space that matches your answer.

INFORMATION ABOUT YOUR HOUSE

1. In which type of house do you live?
   _____1. Single family
   _____2. Duplex
   _____3. Apartment
   _____4. Mobile home

2. Do you rent or own your home?
   _____1. Rent
   _____2. Own
   _____3. Live rent free

3. Do you pay any part of your utility bill (electric, water, gas)?
   _____1. All
   _____2. Part
   _____3. None

INFORMATION ABOUT OCCUPANTS

4. What is the sex of the household head?
   _____1. Male head, female present
   _____2. Female head, male present
   _____3. Male and female co-heads
   _____4. Male head, no female present
   _____5. Female head, no male present

FORM B-2-W

5. In what year were you born? _____ _____
year age

6. How many years of formal education have you completed? _____
years

What is the highest grade or degree you completed? _____

7. How many people are living in this house? _____
people

8. What is your monthly household income? _____
monthly

9. How many children are living in this house? _____
#children

SEX	AGE	SEX	AGE
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

INFORMATION ABOUT YOUR ENERGY OPINIONS

DIRECTIONS: Please circle your response. "?" is for DO NOT KNOW.

10. Yes ? No Air leaks are the largest single source of energy loss in a home.

11. Yes ? No Lowering the temperature of a furnace or heater is the most inexpensive way of cutting energy costs.

12. Yes ? No More heat is needed to be comfortable in moist air.

13. Yes ? No Wearing layers of clothing can help keep you warm.

14. Yes ? No Weatherizing involves three major procedures: weatherstripping, caulking and installing storm windows and doors.

15. Yes ? No Fuzzy, fluffy jackets are warmer than smooth, silky jackets because they hold body heat.

16. Yes ? No 10 to 30 cents of every dollar spent for heating can be saved by fixing air leaks in a home.

17. Yes ? No Hot water heaters use very little energy.

18. Yes ? No Placing rolled newspaper, heavy towels, or rugs at the base of doors and windows are easy and inexpensive ways to stop drafts.

19. Yes ? No A fan can be used to move air from a warm room into a cold room and heat the cold room quickly.

GENERAL INFORMATION

20. Have you had any previous Energy Conservation Education?

_____1. Yes

_____2. No

21. If yes, please indicate from whom, where, and/or when.

_____

_____

_____

22. Did you know the "Energy Aide" before today?

_____1. Yes

_____2. No

23. How long have you known the "Energy Aide"?

_____1. Just met

_____2. Less than one year

_____3. 1 to 5 years

_____4. More than 5 years

Thank you very much for answering this survey. We appreciate the time and effort you have given this task.

ENERGY EDUCATION PROGRAM

FOLLOW-UP

SURVEY FORM

ID number _____

Location _____

Date _____

Aide Name _____

_ _ _ _

Coding form
Respondent
Number

INFORMATION ABOUT YOUR ENERGY OPINIONS

DIRECTIONS: Please circle your response. "?" is for DO NOT KNOW.

1. Yes ? No Air leaks are the largest single source of energy loss in a home.
2. Yes ? No Lowering the temperature of a furnace or heater is the most inexpensive way of cutting energy costs.
3. Yes ? No More heat is needed to be comfortable in moist air.
4. Yes ? No Wearing layers of clothing can help keep you warm.
5. Yes ? No Weatherizing involves three major procedures: weatherstripping, caulking and installing storm windows and doors.
6. Yes ? No Fuzzy, fluffy jackets are warmer than smooth, silky jackets because they hold body heat.
7. Yes ? No 10 to 30 cents of every dollar spent for heating can be saved by fixing air leaks in a home.
8. Yes ? No Hot water heaters use very little energy.
9. Yes ? No Placing rolled newspaper, heavy towels, or rugs at the base of doors and windows are easy and inexpensive ways to stop drafts.
10. Yes ? No A fan can be used to move air from a warm room into a cold room and heat the cold room quickly.

AIDES: I would now like to ask you some general questions concerning winter energy conservation activities.

DO NOT READ RESPONSES TO THE PARTICIPANTS!

11. Why did you decide to weatherize your home this winter? (You may check more than one response,)

_____ 1. For more comfort
_____ 2. My utility bills were to high
_____ 3. To save money
_____ 4. My friends did and/or relatives did
_____ 5. To save energy for future generations
_____ 6. Because the supply of energy is so scarce
_____ 7. Have not adopted any energy conservation activities
_____ 8. Other (please specify) _____

_____

_____

12. Why did you decide not to weatherize your home this winter? (Do not ask this question if the participant answered item 11)

_____ 1. Lack of money
_____ 2. Weather (too cold)
_____ 3. Too ciose to vacation time
_____ 4. Rent residence (Landlord should do it)
_____ 5. It won't save energy
_____ 6. Don't have the time
_____ 7. Not able to do the work
_____ 8. Don't know how
_____ 9. Home was already weatherized
_____ 10. Other (please specify) _____

_____

_____

13. Do you plan to do any winter weatherization projects in the future?

_____ 1. Yes
_____ 2. No
_____ 3. Do not know yet

COMMENTS: _____

_____

_____

14. What person or persons influenced you most to weatherize your home this winter?

_____ 1. The Energy Aide (Please write in name) _____
_____ 2. Friend (Please write in name) _____
_____ 3. Relative (Please write in name) _____
_____ 4. My family
_____ 5. Community leader (Please write in name) _____
_____ 6. No one influenced the decision
_____ 7. Other (Please specify) _____

_____

15. Did you have your house Audited?

_____ 1. Yes COMMENTS: _____
_____ 2. No _____
_____ 3. Haven't yet _____

16. Do you feel the Energy Audit was beneficial to you?

_____ 1. Yes COMMENTS: _____
_____ 2. No _____
_____ 3. Did not have _____

17. How did you get the structural changes made?

_____ 1. Did them myself COMMENTS: _____
_____ 2. Friends helped me _____
_____ 3. Family helped _____
_____ 4. Paid workmen _____
_____ 5. Service group _____

18. Is there anything else you would like to tell us about the Energy Education Program?

_____ 1. Yes COMMENTS: _____
_____ 2. No _____
_____ 3. I do not know _____

FORM D-1-W

19. Did you teach a neighbor or a friend how to keep warm this winter?

_____ 1. Yes
_____ 2. No
_____ 3. I do not know

COMMENTS: _____
_____
_____

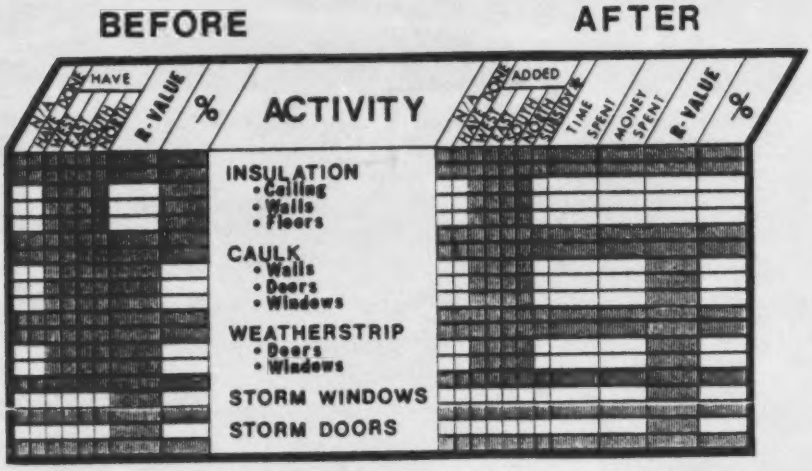
20. Did they do anything because of the information you gave them?

_____ 1. Yes
_____ 2. No
_____ 3. I do not know
_____ 4. WHAT _____
_____
_____

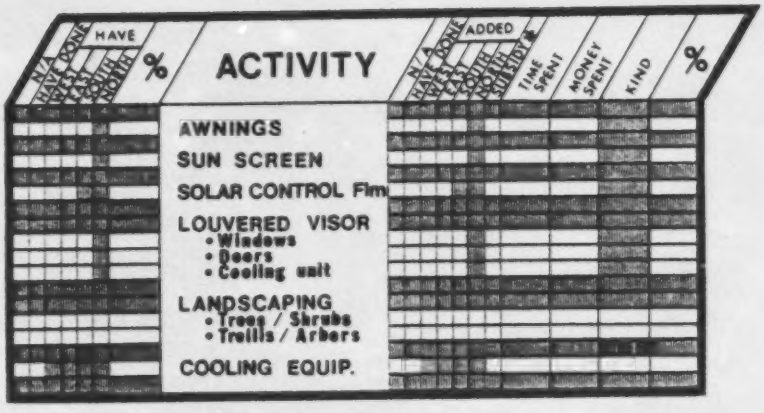
THANK YOU VERY MUCH FOR TALKING WITH ME.
I APPRECIATE YOU GIVING ME THIS TIME.
I HOPE YOU WILL BE MORE COMFORTABLE THIS WINTER.

FORM D-1-W

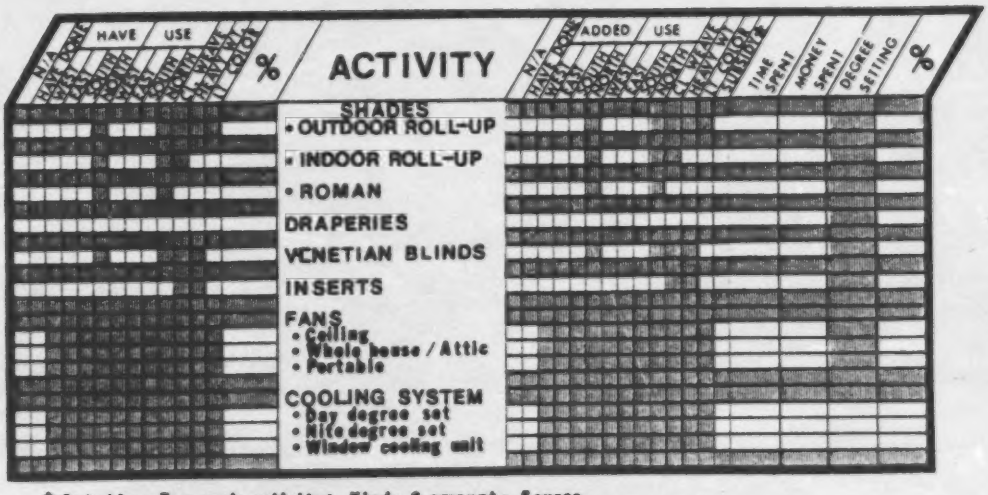
General Structure



Summer / Structure



Summer / Behavior



* Subsidy - For each activity: Kind; $ amount; Source.

APPENDIX B

AIDES SUCCESS STORIES FOR SUMMER

Aide 1

It was odd but the first house I went to on the summer program was the most successful. Mr. and Mrs. R. were very receptive. They added a cover over their water cooler. They shaded a west window and closed their west door. They used old carpet over a cold frame over the water cooler. All materials they had on hand. They said shading the cooler, the west window, and closing the door made their house one-third cooler. They also added new pads to the water cooler.

In the bedroom they added drapes to a west and north window. The drapes they already had on hand. They said when they walked into the bedroom it was noticeably cooler.

They made several improvements and none of it cost a thing.

Another lady added a bamboo outdoor roll-up to her patio. It shaded her patio plus her east window. She said it made a lot of difference. The cost was around $35.00. A neighbor installed it for her.

Aide 2

Mrs. B. is blind in one eye, has a cateract on the other eye, and lives alone. She did not like the sun to shine in her kitchen window located on the west side of her house. She felt solar control film would help her kitchen feel cooler and would provide her with some degree of security. The solar control film, purchased for approximately $8.00, was placed on the kitchen window and enough remained to cover her dining room window. She has shared her accomplishment with her peers at the local senior citizens nutrition center.

Mrs. M., a little lady in her 80's, takes summer comfort seriously. Her attire consists of a cotton/polyester blend dress and men's cotton boxer shorts. Her family supports her effort to keep cool as evidenced by the bright red boxer shorts they recently purchased for her.

Aide 3

Mrs. T. had a double window in her kitchen that faced the west. This heated her kitchen in the afternoon. On first visit I suggested that she put a shade or some type of covering over it and when I went back for follow-up survey she had made a good curtain that completely covered the window with some old lined drapes that were white. She said it really made a difference.

Mrs. G. lives in a mobile home and had extra high electric bills because of cooling. I talked with her about possible things to do, mostly window treatment. I helped her turn her water heater down and when I went for follow-up survey she had put a roller shade on the west window and said it seemed to help a lot.

Mrs. S. was standing on the porch when I first went to her home. She yelled out to me and said "are you looking for old people?" I replied, "I sure am." I had been to her neighbor two days before and during the conversation she made a comment about wondering if she was going to be skipped. Mrs. S. said her neighbor was thinking about using some of the ideas in the kit. Mrs. S. recognized what her neighbor was talking about at first sight.

Aide 4

Mrs. B. that I worked with last winter wanted to do everthing--caulking, weather stripping. Went back this summer. Had started putting in storm windows for winter. Taking old windows out, replacing with new. I told her about storm window that went over old windows. Next time I went back she had hired a man to put new windows over old. She saved some money. Doing caulking as they put in new windows.

Aide 5

My story is about two very different households.

The first one--Mr. and Mrs. A were very interested in the program. I went back to help put up solar film. They were not ready to work and did not seem to care if it was done. Finally Mr. A. told me that the doctor just told them that Mrs. A had cancer and they were using all of their money for her medicine.

The second family--Mr. and Mrs. B. did not want (or could not afford) solar film. They did not care for inserts, so we put up aluminum foil on their west windows. While I was there they said that the attic fan must be broke because the only time it worked was at night. It seemed that Little Dixie had failed to explain the purpose of the fan. So, I explained that it would just help at night.

Aide 6

This is one of the most successful stories that I have. One lady who had her air conditioner on the west side, took a feather bed, which she had made pillows out of the feathers, and made a shade on her porch to shade her air conditioner and also her porch.

Also, Mrs. M. put in an air conditioner and she added a shade over her air conditioner, an attic fan and vents in the end of the house.

Mrs. W. had an air conditioner given her by her daughter and her daughter helped her put it in. She said it made her house a lot more comfortable.

There was Mrs. H. who put up a roll-up shade on the west side to keep the sun out. She is also planting a tree when the time comes.

AIDES SUCCESS STORIES FOR WINTER

Aide 1

My success story is about a man who questioned everything I discussed. He had to have facts and figures about everything. He really kept me on my toes. He demanded more of me than my other clients. He was a very interesting person.

He always wanted to know how everything related to him cost wise. I thought I'll never convince this man that it would be to his benifit. He always stressed his age and that he didn't have long pay back period.

You can imagine when I went back how surprised I was to find he had put plastic on his windows. His answer as to why he had done it was because, "YOU TOLD ME TOO." Be he stressed. "I'M KEEPING UP WITH MY FUEL BILLS TO SEE IF IT PAYS OFF AND I'M HOLDING YOU ACCOUNTABLE."

Aide 2

M. A. is my success story. I first surveyed her on the summer program. She was hostile, rude and uncooperative. She blamed our program for her not receiving an allotment for payment on her summer cooling bill which so many other senior citizens had received. I was determined to eliminate her from the winter program.

However, I did not receive her audit until after the winter program was under way. Since I had to go back anyway, I decided to give it another try.

The first visit was pretty discouraging. Lots of complaining and fault finding. She did take me through her home though, and pointed out things she know needed to be done. Most of the repairs or changes she needed to make were minor with the exception of her attic fan. The louvers were stationary, meaning they could not be moved to close off the

attic area from the remainder of the house. I couldn't believe she had never closed off this area in the past. I tried to keep my conversation low-keyed, since I really had not been able to predict from past experience how she would react to my suggestions (she turned her A/C off completely during the summer, due she said, to a remark I had made regarding our need to conserve energy). I left her home feeling she was not really as independent in her judgement as she would like me to believe.

A couple of days later she called and wanted me to visit her again. I spent the first 45 minutes listening to her describe her husband's death, her feelings of guilt regarding his death and the loneliness and confusion she was having difficulty dealing with since his death.

I listened. Then she began to ask for ways to correct the problem she had with her attic fan. We discussed several ways and I left her with an invitation to call me when she decided to cover the area.

She chose to do the job by herself--and was thrilled when she called me to take a look at what she had done. She did a great job, although it would have been easier had we worked together. She covered the area by taking roof covering and inserting it through the louvers, then moving it across the area with a broom handle. She used many layers and totally covered the area. The weight of the roofing material will keep it in place.

She likes the way it looks and proud that she did it by herself and is equally pleased that she was able to think of an inexpensive way to do the job.

Although, I too am very pleased with her completed project, I am more pleased with the change in her attitude toward this program.

Aide 3

Mrs. M. is my success story. She was interested in most everything I showed her. The thing she did was make lots of inserts. She made a pretty decorated one for her water fan in the window. She made 10 large ones for a porch. She was careful to make them fit tight.

She was excited about what she was doing and shared the ideas with her neighbors.

Aide 4

Mrs. G. was interested in winter program. Wanted to know everything to help her keep warmer. Lived in a real old house. We put up plastic on all windows and put weatherstripping on all doors. Started using fan to heat other rooms, because she just heated one room with wood heater.

Aide 5

My success story is on a lady who I was not going to go back to on winter program. She called me and said that they were turning their garage into another room. She was going to insulate her inside walls.. I told her that was not necessary and saved her more money plus that one room was a R-19 when they finished.

APPENDIX C

1980 PROJECT FOLLOW-UP REPORT

THE NEED:

In 1980, a project similiar to the "Energy Assistance for the Aged" project was conducted from September through December in Choctaw County Oklahoma. That project, entitled "Energy Education for Limited Income Families: The Choctaw Project" was designed to test the paraprofessional delivery method to rural people.

Seven hundred eighty-eight households (1,943 people) were taught by the energy aides. At the end of the project, 656 were interviewed to ascertain a measure of change in knowledge, behavioral and structural practices. An analysis revealed statistically significant differences between pre-project and post-project means. Ninety-nine percent of the households adopted one or more practices and increased their knowledge.[1]

Based on the data collected, the project directors concluded that the immediate goal of teaching and motivating people to adopt energy efficient practices had been met. However, the long term impact of the project was not known.

The thesis of these energy education projects (begun in 1977) has been that people, when informed and skilled, can and will repeat learned practices without further instruction or motivation from an educator. Because of the short term nature of many of the low-cost, no-cost energy conservation practices and the behavioral aspects of conversation and because of the mobility of some households, it is often necessary that the practices taught in these projects be repeated over time.

While initial cost of the one-to-one or small group teaching method is relatively high per household, the cost over time decreases if households can function effectively independent of the service suppliers (i.e., teacher or aide used in these projects). The educational route to assisting families could have important economic, political and social advantages to households and society over other methods currently being used or considered (i.e., payment of utility bills, provision of materials and/or labor to weatherize homes). These methods tend to increase dependence on the provider and may not actually decrease energy consumption.

Thus, public policy makers and program designers need empirical data on the long-term impact of alternatives such as the energy education projects conducted between 1977-1982 by the Cooperative Extension Service of Oklahoma State University with additional funding from the Oklahoma Department of Energy/Oklahoma Corporation Commission.

[1]For a more complete understanding of the project, data collection and results, see the project report: Williams, S., Braun, B. and Lauener, N.L. Energy Education for Limited Income Families: The Choctaw Project. Stillwater, OK: Cooperative Extension Service, Oklahoma State University, 1981.

THE PROCEDURE:

To obtain a measure of long term benefit, the program directors conducted an interview survey of a sampling of the 1980 participants. Based on consultations with statisticians and guidelines for sample selection, it was decided that 250 of the 656 final surveyed participants in 1980 would be interviewed by the aides supervisor in the spring of 1982. The sample was drawn using a table of random numbers.[2] Interviews were conducted via telephone using a "Follow-Up Survey Form."[3]

THE FINDINGS:

In response to the question, "Have you done any new weatherization to your home this winter?", 103 (43%) said yes. Their weatherization practices fell into nine categories with a total of 193 activities reported. (For distribution, see interview form at end of section.) Fifty-seven of these practices were done for the first time in the winter of 1981-82. That is, participants had not done them during the project but had done so since the project terminated. (Detailed records kept in 1980 provided the basis of this finding.)

Respondents were asked further why they decided to weatherize. Of 119 responses 53 said "because of cold drafts"; 25 said "for comfort"; 23 gave a variety of answers; 12 said "my utility bills were too high"; 3 said "to save money"; and 3 others said "to save energy for future generations."

A variety of reasons for not weatherizing were given: 27 said "their home was already weatherized"; 25 said "they rented and the landlord should do it"; 23 said "they were not able to do the work".

To predict continued impact of the original project, respondents were asked if they planned to weatherize their homes in the future: 133 (55%) said yes; 74 (31%) said no; and 33 (14%) didn't know.

To better understand how the decision to weatherize this winter was made, respondents were asked to state what persons or person most influenced them. One hundred eight responses were given. Almost half (51) said no one; about a third (33) said the energy aide (from the previous year); others, including friends and relatives, accounted for the remainder.

Respondents were asked how they got the structural changes made. One hundred eighteen responses were given as follows: 64 (54%) did them themselves; 21 (17%) said the family helped; 18 (15%) named service groups like Little Dixie Community Action, Indian Program or Urban Renewal.

[2]Krejcie, R. and Morgan, D. "Determining Sample Size For Research Activities," Educational and Psychological Measurement, 1970, pp. 607-610.

[3]A copy, including frequencies obtained, follows this report.

Impact was further measured by asking if the respondents did anything differently now than they had done before as a result of the project. Of 240 responses, 64 (27%) said yes. The rest said no or did not know.

Households who adopt teachings and are satisfied with the result can influence others to do similar activities. Thus, respondents were asked if they had taught a neighbor or friend this winter how to keep warmer. Seventy-eight (34%) said yes. The rest said no or don't know. Of those who were taught, respondents said 38 (48+%) did something because of the information given. Respondents said 10 (12+%) did not and for the rest, 30 (38+%) their activity was not known.

THE CONCLUSIONS

Based on the follow-up survey, it was concluded that:

1. The projects do have a long term impact that alters the cost/benefit ratio of the initial project. Based on the total dollar cost for the delivery of the project in 1980, divided by the number of participants who adopted practices, it was determined that cost per household for one year's pilot weatherization project was $63. However, if the number repeating the following year is added to the 1980 total (based on a sampling projection total of 282) the number doing practices taught theoretically rises to 939. Also, if the number taught by participants and reported to have done something is added (55 in 1980; 38 in 1982) the number of households rises to 1031. Using this logic, the dollar cost of the 1980 project, when divided by the increased number of households is reduced to $40.

While this is a crude measure of cost/benefit of the educational method for resolving energy related problems in limited resource households, it is a start. This simple measure leads to the conclusion that the impact of the educational approach, when measured over time, allowing for repeated and increased adoption of practices, does have potential for being a cost- effective, as well as a socially beneficial, methodology.

2. The education has a long-term impact on knowledge, behavior and skills of participants.

3. Respondents had learned enough during the project to do several practices the following year they had not done at the end of the project.

4. As in previous projects, reasons of cost and comfort continue to account for adopting behavior as reported by the respondents.

5. Over half of the sample estimate they will continue weatherization practices in the future. Thus, the project will continue to benefit households and society.

THE RECOMMENDATIONS:

Based on this survey, the program designers and directors make the following recommendations:

1. That the educational method be continued in other projects of a similar nature with impact measured over time;
2. That a more refined cost-benefit analysis be applied;
3. That other publicly-sponsored programs related to energy problems be studied and compared for their cost and social effeciveness;
4. That with an aged clientele, telephone surveys not be used exclusively as respondents may not alwasy be able to hear and understand questions; and
5. That program designers and public policy makers consider carefully the findings and implications of this survey.

For more information:

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ENERGY EDUCATION FOR LIMITED

INCOME FAMILIES

FOLLOW-UP INTERVIEW FORM

Date Spring 1982 ID number 240 households

Interviewer Karen Conway Location Choctaw County

DIRECTIONS: Please answer each question or statement by putting an "X" in the space that matches the respondents answer. The "X" indicates a positive response to the question or statement ..... a blank indicates a negative response to the question or statement.

1. HAVE YOU DONE ANY NEW WEATHERIZATION TO YOUR HOME THIS WINTER . . SUCH AS...

WINTER 1980		WINTER 1981	NEW ACTIVITY
54	. . . Seal windows with caulk . . .	42	11
48	. . . Seal door frames with caulk .	26	10
45	. . . Seal exterior walls with caulk	9	1
38	. . . Weatherstrip windows	11	3
46	. . . Weatherstrip doors	20	6
57	. . . Place storm windows on windows	61	19
33	. . . Place storm doors on doors .	16	7
	Insulation added		6
	Underpinning added		2

DO NOT READ RESPONSES

2. WHY DID YOU DECIDE TO WEATHERIZE THIS WINTER?

53 1. Because of the cold drafts
25 2. For more comfort
12 3. My utility bills were too high
3 4. To save money
-- 5. My friends did and/or relatives did
3 6. To save energy for future generations
-- 7. Because the supply of energy is so scarce
-- 8. Have not adopted any energy conservation activities
23 9. Other (please specify) _____

3. WHY DID YOU DECIDE NOT TO WEATHERIZE YOUR HOME THIS WINTER?
(Do not ask this question if the participant answered item 2)

17 1. Lack of money
-- 2. Weather (too cold)
-- 3. Too close to the holiday season
25 4. Rent residence (Landlord should do it)
-- 5. It won't save energy
6 6. Don't have the time
23 7. Not able to do the work
1 8. Don't know how
27 9. Home was already weatherized
72 10. Other (please specify) _____

4. DO YOU PLAN TO WEATHERIZE YOUR HOME IN THE FUTURE?

133 1. Yes COMMENTS: _____
74 2. No _____
33 3. Do not know yet _____

5. WHAT PERSON OR PERSONS INFLUENCED YOU MOST TO WEATHERIZE YOUR HOME THIS WINTER?

33 1. The energy aide
3 2. Friend
3 3. Relative
-- 4. Community leader
51 5. No one influenced the decision
18 6. Other (please specify) _____

6. HOW DID YOU GET THE STRUCTURAL CHANGES MADE?

64 1. Did them myself COMMENTS: _____
6 2. Friends helped me _____
21 3. Family helped _____
9 4. Paid workmen _____
18 5. Service group _____

7. AS A RESULT OF THE INFORMATION YOU HAVE GAINED FROM THE GROUP MEETING AND/ OR THE HOME VISITS LAST WINTER-IS THERE ANYTHING THAT YOU DO DIFFERENTLY NOW THAN YOU DID BEFORE TO CONSERVE ENERGY?

64 1. Yes COMMENTS: _____

155 2. No _____

21 3. I do not know _____

8. IS THERE ANYTHING ELSE YOU WOULD LIKE TO TELL US ABOUT THE ENERGY EDUCATION PROGRAM?

66 1. Yes COMMENTS: _____

163 2. No _____

11 3. I do not know _____

9. DID YOU TEACH A NEIGHBOR OR A FRIEND HOW TO KEEP WARMER THIS WINTER?

78 1. Yes COMMENTS: _____

150 2. No _____

12 3. I do not know _____

10. DID THEY DO ANYTHING BECAUSE OF THE INFORMATION YOU GAVE THEM?

38 1. Yes

10 2. No

30 3. I do not know

____ 4. WHAT _____

_____

_____

THANK YOU VERY MUCH FOR TALKING WITH ME.

I APPRECIATE YOU GIVING ME THIS TIME.

I HOPE YOU ARE MORE COMFORTABLE THIS WINTER.